APPENDIX B

STATEMENT OF WORK
FEASIBILITY STUDY, REMEDIAL DESIGN AND REMEDIAL ACTION
CAMP EDWARDS, MASSACHUSETTS MILITARY RESERVATION

STATEMENT OF WORK

SECTION 1: OBJECTIVES, REPORTING REQUIREMENTS, AND SCHEDULE

I. OBJECTIVES

The primary objective of the Feasibility Study/Remedial Design/Remedial Action (FS/RD/RA) is to evaluate potential remedial alternatives for Remedial Action (RA) in Areas of Concern in the Training Range and Impact Area at Camp Edwards, to provide a basis for EPA to select remedial actions, to conduct remedial design activities and to implement the remedial action selected by EPA.
The RA Areas of Concern identified by EPA to date include:

1. Contaminated Soils and groundwater related to Demolition Area
2. Contaminated Soils and groundwater at Southeast Corner of Ranges;
3. Contaminated groundwater in and emanating from Central Impact Area;
4. Areas throughout the Training Ranges and Impact Area Containing Surface and Subsurface Unexploded Ordnance; and

5. Contaminated Soils and Groundwater at CS 19 to the extent that the IRP program does not propose remediation that is protective

EPA may identify other RA Areas of Concern as data warrants. For purposes of conducting FS/RD/RA activities, Respondent may group Areas of Concern

A. Feasibility Study (FS)

The objectives of the FS are, without limitation, to:

1. review the applicability of various remedial technologies, including innovative technologies, to determine whether they are appropriate and technically implementable remedies;

2. Identify the Remedial Action objectives;

3. determine if each alternative developed by combining applicable technologies is effective, by evaluating in the short and long term whether it

is:

(a) effective,
(b) implementable, and
(c) cost effective (note that cost shall only be used to evaluate alternatives of similar effectiveness);

4. evaluate each of the effective remedial alternatives or combination of alternatives through a detailed and comparative analysis.

The FS also includes, but is not limited to, conceptual design elements, engineering analyses, cost analyses, and an analysis of time frames for the achievement of specific clean-up goals.

B. Remedial Design/Remedial Action (RD/RA)

The RD/RA portion of this Statement of Work defines the response activities and deliverable obligations in order to implement the Work required at the Training Ranges and Impact Area at Camp Edwards. The Remedial Action will be selected by EPA in a Decision Document following completion of the FS, and after an opportunity for public comment.

II. REPORTING REQUIREMENTS

All data, methods, and interpretations must be:

A. scientifically and technically sound with all assumptions, biases, potential deficiencies, safety factors, and design criteria explicitly stated in writing;

B. discussed with observations and interpretation clearly identifiable and distinguishable;

C. discussed with all supporting reference material clearly identified and included;

D. concisely illustrated and presented in separate graphs, charts, maps, plans and/or cross-sections where possible so that the text provides a clear discussion of such illustrations;

E. linked to each and every objective for which they were completed and to which they are applicable; and

F. sufficient to satisfy the objectives of the FS listed above.

III. SCHEDULE: STEPS AND DELIVERABLES

A. FS/RD/RA Steps

The Respondent shall perform the FS/RD/RA as discussed in this Statement of Work and as shown in Table 1. The steps identified are based on the current understanding of the Training Ranges and Impact Area at Camp Edwards. However, the results of any field investigations undertaken during the FS/RD/RA may require changes in the process.

B. FS/RD/RA Deliverables

Deliverables for each step of the FS/RD/RA are shown on Table 1. The actual number of deliverables may vary depending on:

1. Grouping of Areas of Concern for analysis and remediation;

2. The types of deliverables proposed by the Respondent;

3. revisions based on EPA review;

4. requests for additional field studies, analyses, and documentation by EPA or the Respondent; and

5 the quality and completeness of the Respondents' work.

C. FS/RD/RA Schedule

Initiation of the schedule for the Respondent to complete the scoping of the FS/RD/RA phase and deliver the Work Plan for the FS/RD/RA shall be triggered by the Effective Date of the Order to perform the FS/RD/RA. Initiation of the other phases of the FS/RD/RA shall be triggered by notice from EPA as stated in Table 1. EPA may give notice to start a

component of the study even if prior steps have not been completed.

This schedule shall be included in the Work Plan for the FS/RD/RA. It shall also accompany each of the major deliverables and monthly progress reports.

TABLE 1

STEP	DELIVERABLE	DUE DATE
1(a.) Scoping of FS	Workplan for FS	12 weeks after effective date
1(b.) Initial FS	Screening Report	30 days from FS workplan approval
1(c.) Post Screening	Field Investigation Workplan (if necessary**)**	30 days from approval of Screening Report
1(d.) Draft FS	Draft FS	45 days from approval of Screening Report (unless field investigation is necessary in which case EPA will determine schedule)
2(a.) Remedial Design	RD Workplan and revised P.O.P.	60 days from EPA Remedial Action Selection
2(b.) Remedial Design	60% RD	90 days from EPA approval of the RD Workplan
2(c.) Remedial Design	100% RD	120 days from receiving EPA comments on the 60% RD
3(a.) Remedial Action	RA Workplan and revised P.O.P.	60 days from EPA approval of 100% RD
3(b.) Remedial Action	Pre-construction Conference	15 days from EPA approval of RA Workplan
3(c.) Remedial Action	Initiation of construction	30 days from EPA approval of RA Workplan and revised P.O. P
3(d.) Remedial Action	Operation and Maintenance Plan; Environmental Monitoring Workplan; Revised P.O.P.	60 days from 75% Construction Complete date
3(e.) Remedial Action	Final Construction Inspection	45 days after 100% Construction Complete
4(a.) Remedial Action Complete	Final Remedial Construction Reports (“close-out Reports”)	60 days after Construction Complete
4(b.) Remedial Action Complete	Demonstration of Compliance Report	After demonstrating compliance with established cleanup levels

SECTION 2: SCOPING OF THE FEASIBILITY STUDY

II. OBJECTIVES

The scoping of the FS shall ensure that the Respondent:

A. understands the objectives of the FS;

B. develops procedures to meet the FS objectives, including those for field activities;

C. assembles and evaluates all existing data, identifies data gaps, resolves inconsistencies, and fills data gaps where possible;

D. develops a conceptual understanding of the Training Ranges and Impact Area based on the evaluation of existing data and all newly acquired data;

E. identifies likely response scenarios and potentially applicable technologies;

F. identifies, for EPA review and approval, the type, quality and quantity of the data needed for EPA to assess potential remedial technologies, to evaluate technologies that may be combined to form remedial alternatives, and to support decisions regarding remedial response activities;

G. prepares site-specific health and safety plans that shall specify, at a minimum, employee training and protective equipment, medical surveillance requirements, standard operation procedures, and a contingency plan that conforms with 29 CFR 1910.120(1)(1) and (1)(2);

H. develops sampling and analysis plans that shall provide a process for obtaining data of sufficient quality and quantity to satisfy data needs; and

I. develops a detailed, enforceable schedule (based on the schedule contained in Table 1) which shows the flow of studies and the submission of all deliverables.

II. DELIVERABLES

A. Overview

In scoping the FS, the Respondent shall deliver to EPA the following in writing:

1. Project Operations Plan;
2. Data Requirements for Potential Remedial Alternatives and Technologies;and
3. An Expanded, Enforceable Schedule for the FS/RD/RA.

Collectively, these documents are referred to as the Work Plan for the FS in Table 1 and elsewhere in this document. The Work Plan for the FS shall be revised as necessary, and revisions submitted prior to each subsequent phase of work as described in Table 1.

To reduce the submittal of repetitive information contained within each of the elements of the Work Plan, the Respondent shall provide the appropriate cross-references at key places within each document. To the extent that existing site sampling and analysis, Health and Safety QAP or other plans exist for work already being conducted at MMR, Respondents may identify such plans or modify them for submission to EPA.

B. Project Operations Plan

Before any field activities commence, several site-specific plans shall be written to establish procedures to be followed by the Respondent in performing the field and laboratory work, and community and agency liaison activities. These site-specific plans include the:

1) Site Management Plan (SMP);
2) Sampling and Analysis Plan (SAP) which includes the Field Sampling Plan (FSP) and the Quality Assurance Project Plan (QAPP);
3) Health and Safety Plan (HSP); and

4) Public Involvement Plan

The Respondent shall combine these plans into the Project Operations Plan (POP), and submit this plan as part of the Work Plan for the FS. The POP is subject to EPA review, subsequent requests by EPA for revision,

and rewriting by the Respondent before the commencement of field work. The four components of the POP are discussed in greater detail in the Attachment of this Statement of Work.

The Respondent shall modify the format and scope of each plan as needed to describe the sampling, analyses, and other activities that are clarified as the FS progresses. These activities include on-site pilot studies and/or laboratory bench scale studies of remedial treatment technologies, and subsequent rounds of field sampling. EPA may modify the scopes of these activities at any time during the FS at the discretion of EPA in response to the evaluation of FS results, changes in FS requirements, and other developments or circumstances.

C. Data Requirements for Potential Remedial Alternatives and Technologies

Potential Remedial Action objectives shall be identified for each contaminated medium, and a preliminary range of remedial action alternatives and associated technologies shall be identified. The Respondent shall identify all potential remedial alternatives that may be useful in remediating affected media including no action, as a baseline. In discussing potential remedial alternatives, Respondent shall describe an alternative as a group of technologies, including innovative ones, that will achieve identified remedial action goals. The Respondent shall identify the various technologies, showing the critical data needed to evaluate such technologies, and the performance of technologies grouped into an alternative. These data requirements shall be initially developed during the Work Plan for the FS and shall be further incorporated in all subsequent field investigation Work Plans.

The identification of potential technologies shall help ensure that data needed to evaluate the technologies are collected. Certain parameters may be common to several possible technologies and alternatives. For example, the following parameters for soils are common: chemical compounds, soil density, soil moisture, soil types, soil gradation, BTU values, total halogens, and total organic carbon. Where groundwater remediation may be required, chemical characteristics of the groundwater other than the concentrations of contaminants of concern may need to be obtained to facilitate evaluation characteristics which can affect

treatment efficiency. These may include pH, hardness, iron and manganese concentrations, and total suspended solids concentration. Similar common data requirements exist for alternative remedies for other media.

In addition to the common data requirements, any other data necessary to evaluate a particular technology or alternative leading to remedy selection shall be noted in the Work Plan and subsequently integrated into each field investigation.

A preliminary list of broadly defined alternatives shall be developed by the Respondent. Consistent with Sections 3.0 of this SOW, this list shall include a range of alternatives in which treatment that significantly reduces the toxicity, mobility, or volume of waste is a principal element; one or more alternatives that involve off site disposal of contamination; and a no-action alternative, to serve as a baseline for comparison of alternatives. The Respondent shall present a chart, or a series of charts, showing the requirements and technologies to be considered for remedial alternatives. In the charts, data requirements shall be linked to the Work Plans for each field investigation.

D. Expanded, Enforceable Schedule for FS

The major deliverables are identified in Table 1. The established schedule along with a more detailed, expanded schedule for subtasks shall be included as a component of the Work Plan for the FS. Modifications of the schedule must be approved by EPA prior to their implementation.

The schedule shall be presented as a chart, which shall include target data and time periods for each deliverable, to the extent possible. The chart shall be updated when the schedule changes by showing the original (planned) due date and revisions of the due date.

A copy of the schedule shall be contained in the preface of each major deliverable of the FS and in each monthly progress report required by the Order.

E. Long-Term Monitoring and Sampling Plan

1. <u>Objectives</u>

The Respondent shall monitor the ground water and

surface water/sediments to determine the potential long-term changes in the nature, extent, quantity, seasonal variability, climatological influence, environmental fate and transport, background levels, and migration pathways for each contaminant identified at the Area of Concern. Long-term monitoring and sampling shall continue until the issuance of the 100% Remedial Design.

2. Work Plan Requirements

The Respondent shall submit a Work Plan for periodically sampling and monitoring contaminants in ground water and surface water/sediments on a long-term basis. The Long-Term Monitoring and Sampling Plan shall be submitted as part of the Work Plan for the FS. The plan shall include provisions for needed expansions of the type, quantity, and coverage of the monitoring.

The plan shall also include a thorough discussion of the statistical and mathematical techniques to be used in comparing the results of each quarterly sampling round to previous sampling results. Notable differences shall be explained and resolved by repeating sampling and analyses, if necessary. The plan shall be consistent with the procedures and requirements established in the Project Operations Plan (Section 2), the overall objectives (Section 1), and the other components of the site characterization (Section 3). The plan shall accommodate expansion, including further studies that may be required by EPA. The plan shall also allow EPA review and approval before deviating from the original Work Plan specifications for field work.

Plans shall be developed for all surface-water courses, groundwater (including all relevant wells), and the biota potentially affected by contaminants released from the Area of Concern. The long-term monitoring, for the most part, shall be separate and in addition to the site-specific studies.

3. Reporting Requirements

Results shall be presented after each quarterly sampling event and in accordance with the procedures described in the Project Operations Plan (Section 2). Results of each round of sampling shall be statistically and mathematically compared with results of previous rounds. Deviations and trends shall be illustrated and explained. All quarterly sampling

reports shall be summarized for EPA review, and submitted as soon as possible following the sampling event.

SECTION 3.0: INITIAL FEASIBILITY STUDY DELIVERABLES

I. Objectives

Remedial Alternatives shall be developed that:

a. Provide a level of protection to the aquifer underlying the Training Ranges and Impact Area that accounts for the following facts:

i. That the Cape Cod aquifer is a single continuous aquifer which then served as the "sole source" of drinking water for the approximately 147,725 permanent residents and 424,445 peak seasonal residents of Cape Cod;

ii. There is no existing alternative drinking water source, or combination of sources, which provides fifty percent or more of the drinking water to the designated areas, nor is there any reasonably available alternative future source capable of supplying Cape Cod's drinking water demands;

iii. As a result of its highly permeable soil characteristics, the Cape Cod aquifer is susceptible to contamination through its recharge zone from a number of sources. Since groundwater contamination can be difficult or impossible to reverse, and since this aquifer is relied on for drinking water purposes by the general population, contamination of the aquifer would pose a significant hazard to public health;

iv. The Training Range and Impact Area lie directly over the Sagamore Lens, the most productive part of the Cape Cod Aquifer. The Training Range and Impact Area is a major groundwater recharge Area, located above what may be the apex of the Sagamore Lens. Groundwater flows radially in all directions from the Training Range and Impact Area;

v. The part of an aquifer that directly supplies a public water supply well is known as a "wellhead protection Area". The Training Range and Impact Area lie directly above segments of several wellhead protection areas on Cape Cod; and

vi. The Sagamore Lens has been identified by the Cape Cod Commission as the portion of the Cape Cod Aquifer most capable of supplying sufficient water to satisfy future demand.

b. protect human health and the environment by recycling waste or by, eliminating, reducing, and/or controlling risks to human health and the environment posed through each pathway at the Area of Concern;

c. consider the long-term uncertainties associated with land disposal;

d. consider the goals, objectives, and requirements of the Solid Waste Disposal Act;

e. consider the persistence, toxicity, mobility, and propensity to bioaccumulate of contaminants;

f. consider the short and long term potential for human exposure;

g. consider the potential threat to human health and the environment if the remedial alternative proposed was to fail; and

h. consider the threat to human health and the environment associated with the excavation, transportation, and redisposal or containment of contaminated substances and/or media.

II. Development and Initial Screening of Alternatives

The Respondent shall develop an appropriate range of remediation alternatives. Alternatives for remediation shall be developed by assembling combinations of technologies (including innovative ones that offer the potential for superior treatment performance or lower costs for performance similar to that of demonstrated technologies) and the media to which they would be applied, into alternatives that address contamination at the Area of Concern.

A. Development of Alternatives

In addition, the Respondent shall perform, at a minimum, the following activities:

a. development of remedial action objectives, specifying the contaminants and media of concern (provided by EPA), potential exposure pathways (provided by EPA), and preliminary remedial goals that are based on a preference for cleanup to background levels, or where technically impracticable, to levels based on drinking water standards and other health

based levels, EPA risk assessment data, and Site characterization data;

b. development of response actions for each media of interest defining engineering controls, treatment, excavation, pumping, or other actions, separately and in combinations;

c. identification of volumes or areas of media to which response actions shall apply;

d. identification and screening of technologies, including innovative ones, that would be applicable to each response action;

e. identification and evaluation of technology process options;

f. assembly of the selected technologies into alternatives representing a range of treatment and containment options; and

g. identification and evaluation of appropriate handling, treatment, and final disposal of all treatment residuals (e.g., UXO, ash, decontaminated soil, sludge, decontamination fluids).

B. Initial Screening of Alternatives

1. Criteria

In screening the alternatives, the Respondent shall consider, but not be limited to, the short and long term aspects of the following three criteria:

Effectiveness. This criterion focuses on the degree to which an alternative restores and protects the sole source aquifer underlying the Training Ranges and Impact Area as a future water supply needed to address projected water supply shortfalls; as well as the degree to which an alternative reduces toxicity, mobility, or volume through treatment; minimizes residual risks and affords long term protection; complies with Regulations, and minimizes short-term impacts. It also focuses on how quickly the alternative achieves protection with a

minimum of short term impact in comparison to how quickly the protection shall be achieved.

Implementability. This criterion focuses on the technical feasibility and availability of the technologies that each alternative would employ and the administrative feasibility of implementing the alternative.

Cost. The costs of construction and any long-term costs to operate and maintain the alternatives shall be considered.

2. Range of Alternatives

The Respondent shall develop a series of alternatives for each Area of Concern including, but not limited to, the following:

a. An alternative that, throughout the entire soil, source, and/or groundwater plume, reduces the contaminant concentrations to background conditions;

b. An alternative that, throughout the entire soil, source, and/or groundwater plume, reduces the contaminant concentrations to levels that meet or exceed all MCLs, Health Advisories, DWELS, other relevant standards, and a cumulative 10^{-6} excess cancer risk. It shall achieve this objective as rapidly as possible and must be completed in less than ten (10) years and shall require no long term maintenance.

c. A no action alternative to serve as a baseline for alternative comparisons. undertaken during the FS at the Training Ranges and Impact Area.

d. For source control actions, this shall include, as appropriate, a range of alternatives in which treatment that reduces the toxicity, mobility, or volume of the contaminants is a principal element. As appropriate, this range shall include an alternative that removes or destroys UXO and contaminants to the maximum extent feasible, eliminating or minimizing, to the degree possible, the need for long-term management. The Respondent shall also develop, as

appropriate, other alternatives which, at a minimum, treat the principal threats posed by the Area of Concern but vary in the degree of treatment employed and the quantities and characteristics of the treatment residuals and untreated waste that must be managed.

d. For groundwater response actions, the Respondent shall develop a limited number of remedial alternatives that attain site-specific remediation levels within different restoration time periods utilizing one or more different technologies if they offer the potential for comparable or superior performance or implementability; fewer or lesser adverse impacts than others available approached; or lower costs for similar levels of performance than demonstrated treatment technologies.

v. For UXO remediation alternatives, technologies that remove UXO from environment while minimizing any release of contaminants to soil and groundwater.

The Respondent shall give consideration to innovative technologies. If any innovative technologies pertinent to the Area of Concern can be identified, then one or more such technologies shall be evaluated beyond the initial screening.

A no-action alternative that shall be analyzed during the Detailed Analysis of Alternatives.

III. DELIVERABLES

A. Development and Initial Screening of Alternatives Report

A Development and Initial Screening of Alternatives Report shall be submitted to EPA within thirty days of Workplan approval. The report shall contain a chart of all alternatives and the analysis of the basic factors described in Section 4.II. The report shall justify deleting, refining, or adding alternatives. It shall also identify the data needed to select a remedy and the work plans for studies designed to obtain the data. The report shall contain charts, graphs, and other graphics to display the effectiveness of the alternatives including but not limited to:

1. maps showing the three-dimensional extent of contamination across the Area of Concern;

2. maps showing equal concentration lines for various potential soil clean-up levels and correlated to the background through a level that attains all health based standards and a cumulative 10^{-6} cancer risk;

3. graphs of soil volume to be treated or removed plotted against concentration; and

4. graphs showing the predicted concentration reduction over time for potential ground water remedial alternatives.

5 graphs showing the known and expected concentrations of surface and subsurface UXO.

SECTION 4: POST-SCREENING FIELD INVESTIGATIONS/FEASIBILITY STUDY

I. OBJECTIVES

The purpose and objective of this phase is to provide for the information required to fill all relevant data gaps and to provide information necessary to perform the Detailed Analysis of Alternatives and the preparation of the Feasibility Study (FS). This may include, but not be limited to, bench and pilot studies of potential technologies, literature searches, and additional field investigations. Field investigations must be performed by the Respondent, if information relevant to the selection of a remedial action is not sufficient to perform a Detailed Analysis of Alternatives. The Respondent must also perform additional field investigations if new Areas of Concern are identified that require characterization. If it appears that additional field investigations are necessary, the Respondent shall first meet with EPA to discuss what specific work will fill all relevant data gaps and provide enough information and, to the extent possible, expedite these determinations.

II. Post-Screening Field Investigation Work Plan

A Post-Screening Field Investigation Work Plan (if necessary) shall be prepared by the Respondent and submitted to EPA for review and approval within 30 days of approval of the Screening of Alternatives Report. Alternatives, particularly those involving innovative technologies, may require additional field investigations to obtain the data needed for further evaluation of Training Range and Impact Area characteristics and the Detailed Analysis of Alternatives. The Post-Screening Field Investigation Work Plan shall include, but not be limited to:

a. supplemental literature searches to obtain additional data on treatment technologies;

b. bench and pilot scale treatability tests; and

c. the collection of additional field data to assess further the characteristics of the Training Range and Impact Area.

The Post-Screening Field Investigation Work Plan shall conform to the objectives, procedures, and methods

described previously in this Statement of Work. The investigations shall include the collection of data needed to evaluate the effectiveness of the remedial alternatives, conceptually design remedial actions, and select a remedy. In the Post-Screening Field Investigation Work Plan the Respondent shall describe the methods and procedures to be followed to perform field investigations necessary to fill the remaining data gaps. If the Respondent believes that no further field investigations are necessary, they must provide an explanation of how the previous studies fulfilled all of the data objectives and requirements of this Statement of Work. The EPA shall have the final authority to determine if further field investigations are necessary after review of the investigation results.

III. DETAILED ANALYSIS OF ALTERNATIVES

A. Analysis

The detailed analysis of alternatives consists of an assessment of individual alternatives against each of nine (9) evaluation criteria and a comparative analysis that focuses upon the relative performance of each alternative against those criteria. The nine criteria are as follows:

1. Overall protection of human health and the environment; this shall include prevention of the movement of contaminants into the aquifer and its preservation as a public drinking water supply
2. Compliance with Regulations
3. Long term effectiveness and permanence
4. Reduction of toxicity, mobility, or volume through treatment
5. Short term effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

B. Reporting

The Detailed Analysis of Alternatives, which shall be presented in the FS, shall contain the following:

1. further definition of each alternative with

respect to the volumes or areas of contaminated media to be addressed, the technologies to be used, and any performance requirements associated with those technologies;

2. a process scheme for each alternative which describes how each process stream, waste stream, emission residual, or treatment product shall be handled, treated and/or disposed;

3. an assessment and a summary profile of each alternative against the nine (9) evaluation criteria; and

4. a comparative analysis among the alternatives to assess the relative performance of each alternative with respect to each evaluation criterion.

IV. DELIVERABLES

A. Post-Screening Investigation Work Plan

The Respondent shall, if deemed necessary, submit to EPA for review and approval a draft Post-Screening Investigation Work Plan within 30 days of approval of the Screening of Alternatives Report. Upon approval of this Work Plan, the Respondent shall complete the field activities within a time frame that does not delay the delivery of the draft Feasibility Study (FS) report.

B. Draft FS

The Respondent shall submit a complete Draft FS to EPA for review after completing the Post-Screening Field Investigation activities. This submission shall be made within 45 days of approval of the Screening of Alternatives Report unless post screening field studies are necessary. If such studies are necessary, EPA will determine an appropriate schedule for submission of the Draft FS. The FS shall include graphics that allow for comparisons of multiple alternatives at various risk, cost, and clean-up levels of soil, sediment, or water. These include, but are not limited to, graphs of the cost of potential remediation alternatives plotted against a range of soil clean-up levels; graphs of soil/sediment/waste volumes plotted against a range of

soil clean-up volumes; and projected ground water and surface water concentrations plotted against time for ground water and surface water alternatives. The Respondent shall compare the alternatives by using the listed criteria and other appropriate criteria listed in previous Sections of this Statement of Work. Following EPA comments on the First Draft FS, the Respondent shall prepare a Second Draft FS incorporating all EPA comments and requested changes. Depending on Training Range and Impact Area conditions, the acceptability of the latest Draft FS, or other conditions, EPA may request any number of draft FS's until a Draft FS is produced which EPA determines is satisfactory for public comment.

When EPA determines that no other studies or FS Drafts are needed, the most recent Respondents' Draft FS shall be considered the Final Draft Feasibility Study. The Final Draft Feasibility Study shall be submitted for public comment by EPA.

SECTION 5: REMEDIAL DESIGN/REMEDIAL ACTION

Following selection of the appropriate Remedial Action(s) by EPA, the Respondent shall design, construct, operate, monitor, and maintain the Remedial Action(s) in compliance with all applicable statutes and regulations.

I. OBJECTIVES

The Remedial Design activities required by the Respondent shall include, but are not limited to, the design phase. The Respondent shall submit to EPA the required deliverables as stated herein for the Remedial Design activities. Except where expressly stated otherwise in this Statement Of Work, each deliverable shall be subject to review and approval or modification by EPA.

II. DEFINITION

"Design" shall mean an identification of the technology and its performance and operational specifications, in accordance with all applicable federal, state, and local laws, including, but not limited to:

1) all computations used to size units, determine the appropriateness of technologies, and the projected effectiveness of the system;

2) materials handling and system layouts for the excavation, if required, and treatment of soils, the extraction and treatment of groundwater, and the decontamination and demolition of facilities to include size and location of units, treatment rates, location of electrical equipment and pipelines, and treatment of effluent discharge areas;

3) scale drawings of all system layouts identified above and including, but not limited to, excavation cross-sections, and well cross-sections;

4) quantitative analysis demonstrating the anticipated effectiveness of the Remedial Design to achieve the Performance Standards;

5) technical specifications which detail the following:

(i) size and type of each major component;

(ii)required performance criteria of each major component;

(iii) description of the extent of ambient air monitoring including equipment, monitor locations, and data handling procedures; and

(iv) description of access, land easements and/or other institutional controls required, to be supplied with the construction plans and specifications.

III. Remedial Design Deliverables

The Remedial Design phase shall consist of developing a Remedial Design Work Plan and Revised POP, if necessary, including any investigations necessary for developing the design, and the 60% and Final 100% Remedial Design as described below:

Remedial Design Work Plan and Revised POP:

(1) Within 60 days after the remedial action is selected by EPA, the Respondent shall submit a Remedial Design Work Plan and Revised POP, if necessary, for review and approval or modification by EPA The Remedial Design Work Plan and Revised POP shall include at a minimum, the following items:

(i) detailed descriptions of all activities to be undertaken in connection with any investigations necessary for the design and implementation of the Remedial Action. The detailed descriptions shall contain a statement of purpose and objectives of the investigation, identification of the specific activities necessary to complete the investigation, and a detailed schedule for performance of the investigation. The Remedial Design Work Plan shall describe in detail, at a minimum, the following activities to be undertaken during the Remedial Design Phase:

(a) Evaluation of excavation and dewatering techniques that will be used during the Remedial Action. The evaluation shall include a document which describes the

comparative evaluation of techniques investigated based on the following minimum criteria: 1)implementability; 2) effectiveness; 3) costs; and 4) impacts to the surrounding Area;

(b) An investigation to establish an effective air monitoring program to be designed and implemented throughout the Remedial Action;

(c) An evaluation of the screening method(s) to be used to segregate out the debris encountered during the Remedial Action, and the method(s) of treating/disposing of these materials;

(d) Any other investigations proposed by EPA or the Respondent; and

(e) A habitat assessment and restoration plan.

(ii Revised POP prepared in support of all fieldwork to be conducted according to the Remedial Design Work Plan. This Revised POP shall be prepared in accordance with ATTACHMENT A.

60% Remedial Design:

Within 90 days of receiving EPA's approval or modification of the Remedial Design Work Plan, the Respondent shall submit to EPA the 60% Remedial Design for review and comment. This submission shall address approximately 60% of the total Remedial Design for each component of the Remedial Action as described in this SOW. The deliverables for this 60% design submission shall be specified in the Remedial Design Work Plan, but shall include, at a minimum, the results of all field investigations, a discussion of how regulations are being met by the remedial design, the design criteria, the project delivery strategy, preliminary plans, drawings, sketches, and calculations, the required technical specifications, and a preliminary construction schedule and cost estimate. The 60% Remedial Design shall be subject to EPA approval or modification.

Additionally, at the completion of the 60% design, the Respondents shall arrange for and hold a design/pre-construction conference to which EPA and DEP are

invitees.

100% Remedial Design:

Within 120 days of receiving EPA's comments on the 60% Remedial Design, the Respondent shall submit the 100% Remedial Design for review and approval by EPA. This design submittal shall address 100% of the total Remedial Design for each component of the Remedial Action including, but not limited to:

(ii) the final design plans and specifications in reproducible format;

(iii)the final bid documents;

(iv) drawings on reproducible mylars;

(v) a Contingency Plan which shall address the on-site construction workers and the local affected population in the event of an accident or emergency;

(iii) a Constructability Review report which evaluates the suitability of the project and its components in relation to the Training Range and Impact Area; and

(iv) a correlation of the design plans and specifications.

IV. REMEDIAL ACTION

The Remedial Action activities required shall include, but are not limited to: (a) Remedial Action Work Plan and Revised POP; (b) initiation of construction; (c) pre-construction conference; (d) meetings during construction; and (e) operation and maintenance plan, and environmental monitoring plan. The Respondent shall submit to EPA the required deliverables as stated herein for each of these Remedial Action activities. Each deliverable shall be subject to review and approval or modification by EPA.

Remedial Action Work Plan and Revised POP

Within 60 days of receiving EPA's approval or modification of the 100% Remedial Design from EPA, the

Respondent shall submit to EPA for review and approval or modification, a Remedial Action Work Plan and Revised POP for implementing the Remedial Action and associated activities, consistent with the approved Remedial Design for the Training Range and Impact Area. The Remedial Action Work Plan and Revised POP shall contain, at a minimum:

(1) a description of all activities necessary to implement all components of the Remedial Action, in accordance with the Remedial Design, the SOW, and the Order, including but not limited to the following:

(a)award of project contracts, including all agreements with off-site treatment and/or disposal facilities;

(b)contractor mobilization/on-site preparation, including construction of necessary utility hookups;

(c)construction, shake-down, and start-up of the selected remedial action; and

(d)demobilization of all treatment facilities.

(2) a detailed schedule for the completion of all activities, including the required deliverables, and an identification of enforceable milestone events during the performance of the Remedial Action.

(3) a Revised POP shall be prepared in support of all fieldwork to be conducted according to the Remedial Design Work Plan.

Pre-Construction Conference

Within 15 days of receiving EPA's approval or modification of the Remedial Action Work Plan, the Respondent shall hold a Pre-Construction Conference. The participants shall include all parties involved in the Remedial Action, including but not limited to the Respondent and their representatives, DEP and EPA.

Initiation of Construction

Within 30 days of receiving EPA's approval or modification of the Remedial Action Work Plan and

Revised POP, the Respondent shall Initiate all the Remedial Action Activities specified in the schedule contained therein.

Meetings During Construction

During the construction period, the Respondent and their construction contractor(s) shall meet weekly with EPA regarding the progress and details of construction. If, during the construction of the Remedial Action for the Training Range and Impact Area, conditions warrant modifications of the design, construction, and/or schedules, the Respondent may propose such design or construction or schedule modifications. Following approval by EPA, the Respondent shall implement the design or construction modifications required.

Operation and Maintenance Plan, Environmental Monitoring Work Plan, and Revised POP

Within 60 days of the 75% construction complete date, the Respondent shall submit to EPA for review and approval or modification: a) an Operation and Maintenance Plan to ensure the long-term, continued effectiveness of each component of the Remedial Action, b) an Environmental Monitoring Work Plan to ensure conformance with the established Performance Standards, and c) a Revised POP. These plans shall include, at a minimum, the following:

(1) Operation and Maintenance Plan:

(a) a description of normal operations and maintenance;

(b)a description of potential operational problems;

(c)a description of routine process monitoring and analysis;

(d)a description of contingency operation and monitoring;

(e)an operational safety plan;

(f)a description of equipment;

(g)annual operation and maintenance budget;

(h)record keeping and reporting requirements;

(i)a well maintenance program including, at a minimum, the following:

(1) a provision for prompt and proper abandonment, as appropriate, of wells used during the FS/RD which are currently unusable or which become unusable during the Remedial Action activities;

(2) a provision for inspection, continued maintenance and repair, if necessary, of all wells used during the FS/RD/RA and not abandoned;

(3) a provision for continued maintenance or abandonment of wells used during the FS and additional wells used during the Remedial Design, Remedial Action and Operation and Maintenance phases after completion of the Completion Monitoring Program.

(j) site closure and post-closure monitoring:

(1) a cost estimate for post-closure care consistent with 40 C.F.R. Part 264;and

(2) post-closure inspection schedule and provisions for implementing such activities consistent with 40 C.F.R. Part 264;

(2) Environmental Monitoring Work Plan

The Environmental Monitoring Work Plan shall involve monitoring to demonstrate conformance and compliance with the established Cleanup Levels. At a minimum, this plan shall detail how the Respondent will demonstrate that the established Cleanup Levels and Performance Standards have been or will be attained at the Training Range and Impact Area. This plan shall be developed in accordance with the requirements of 40 C.F.R. 264.97 and shall include at a minimum, the

following:

(a) sampling locations;

(b) sampling frequency;

(c) appropriate statistical modeling or other data interpretation techniques; and

(d) a proposal to demonstrate that cleanup levels have been sustained once remediation system has been shut down.

(3) Revised POP

A Revised POP shall be prepared in support of all fieldwork to be conducted according to the Environmental Monitoring Work Plan. The Revised POP shall be prepared in accordance with ATTACHMENT A hereto.

Final Construction Inspection

Within 45 days after the Respondent concludes that the construction has been fully (100% complete) performed, the Respondent shall schedule and conduct a Final Construction Inspection. This inspection shall include participants from all parties involved in the Remedial Action, including but not limited to the Respondent and their contractors, and EPA.

Final Remedial Construction Report

Sixty (60) days after completion of construction of the Remedial Action, the Respondent shall submit Final Remedial Construction Reports for each component of the Remedial Action (entitled "Close-Out Reports") to EPA for approval or modification. Each Close-Out Report shall include, at a minimum, the following documentation:

(1) a summary of all procedures actually used (in chronological order) in order to complete the Remedial Action.

(2) tabulation of all analytical data and field notes prepared during the course of the Remedial Design and Remedial

Action activities including, but not limited to:

(1) QA/QC documentation of these results;

(2) presentation of these results in appropriate figures;

(3) a description, with appropriate photographs, maps and tables of the disposition of the Training Range and Impact Area (including areas and volumes of soil/sediment placement and disturbance);

(4) final, detailed cost breakdowns for each of the treatment process components;

(5) conclusions regarding conformance of treatment processes with the established Cleanup Levels and Performance Standards; and

(6) descriptions of actions taken and a schedule of any potential future actions still to be undertaken.

Demonstration of Compliance Report

At the completion of the period necessary to demonstrate compliance with the established Cleanup Levels, the Respondent shall submit to EPA for review and approval a Demonstration of Compliance Report. This report shall contain all information necessary to demonstrate compliance with the established Cleanup Levels.

Certification of Compliance

EPA shall review the Demonstration of Compliance Report. If EPA determines that the established Cleanup Levels have not been achieved, EPA shall notify the Respondent of its disapproval of the Demonstration of Compliance Report. If EPA determines that the established Cleanup Levels have been achieved, EPA shall conduct a risk assessment to determine whether the risks are within the EPA's risk management standard

for carcinogens and non-carcinogens and, if within the EPA’s risk management standards, the established Cleanup Levels will then become the final Performance Standards and EPA will issue the Respondent a Certification of Compliance.

If EPA determines that the risks are not within EPA's risk management standard for carcinogens and non-carcinogens, EPA will establish modified Cleanup Levels and the Respondent shall continue the Remedial Action until the modified Cleanup Levels, specified by EPA, are achieved, or the remedy is otherwise deemed protective by EPA. At the completion of the period necessary to demonstrate compliance with the modified Cleanup Levels, the Respondent shall submit to EPA for review and approval a Revised Demonstration of Compliance Report. If EPA determines that the modified Cleanup Levels have been achieved, the modified Cleanup Levels will become the Final Performance Standards and EPA will issue the Respondent a Certification of Comliance.

Upon submission of the Demonstration of Compliance Report or the Revised Demonstration of Compliance Report, the Respondent shall continue to monitor all media according to the Demonstration of Compliance Plan until receipt of EPA Certification of Compliance.

ATTACHMENT A to Appendix B

PROJECT OPERATIONS PLAN

Before any field activities commence on the Training Range and Impact Area, the Respondent shall submit several site-specific plans to establish procedures to be followed by the Respondent in performing field, laboratory, and analysis work and community and agency liaison activities. These site-specific plans include the:

A. Site Management Plan (SMP),
B. Sampling and Analysis Plan (SAP),
C. Health and Safety Plan (HSP), and
D. Public Involvement Support Plan (PISP).

These plans shall be combined to form the Training Range and Impact Area Project Operations Plan (POP). The four components of the POP are described in A. through D. herein.

The format and scope of each Plan shall be modified as needed to describe the sampling, analyses, and other activities that are clarified as the FS/RD/RA progresses. EPA may modify the scopes of these activities at any time during the FS/RD/RA at the discretion of EPA in response to the evaluation of FS/RD/RA results, changes in FS/RD/RA requirements, and other developments or circumstances.

A. Site Management Plan (SMP)

The Site Management Plan (SMP) shall describe how the Respondent will manage the project to complete the Work required. As part of the plan the Respondent shall perform the following tasks:

1. Clearly indicate the exclusion zone, contamination reduction zone, and clean area for all field activities.

2. Provide for the security of government and private property.

3. Prevent unauthorized entry, which might result in exposure of persons to potentially hazardous conditions.

4. Establish the location of a field office for all activities.

5. Provide contingency and notification plans for potentially dangerous activities associated with the FS/RD/RA.

6. Monitor airborne contaminants released by any field activities which may affect the local populations.

The overall objective of the Site Management Plan is to provide EPA with a written understanding and commitment of how various project aspects such as access, security, contingency procedures, management responsibilities, waste disposal, budgeting, and data handling are being
managed by the Respondent. Specific objectives and provisions of the Site Management Plan shall include, but are not limited to the following:

1. Communicate to EPA, and the public the organization and management of the FS/RD/RA, including key personnel and their responsibilities.

2. Provide a list of contractors and subcontractors of the Respondent in the FS/RD/RA and description of their activities and roles.

3. Provide regular financial reports of the Respondent' expenditures on the FS/RD/RA activities.

4. Provide for the proper disposal of materials used and wastes generated during the FS/RD/RA (e.g., drill cutting, extracted ground water, protective clothing, disposable equipment). These provisions shall be consistent with the off-site disposal aspects of SARA, RCRA, and applicable state laws. The Respondent, or their authorized representative, or another party acceptable to EPA shall be identified as the generator of wastes for the purpose of regulatory or policy compliance.

5. Provide plans and procedures for organizing, manipulating, and presenting the data generated and for verifying its quality before and during the FS/RD/RA.

The last item shall include a description of the

computer data base management systems that are compatible with hardware available to EPA Region I personnel for handling media-specific sampling results obtained before and during the FS/RD/RA. The description shall include data input fields, examples of data base management output from the coding of all FS/RD/RA sample data, appropriate quality assurance/quality control to ensure accuracy, and capabilities of data manipulation. To the degree possible, the data base management parameters shall be compatible with the EPA Region I data storage and analysis system.

B. Sampling and Analysis Plan (SAP)

The SAP shall consist of both: (1) a Quality Assurance Project Plan (QAPP) that describes the policy, organization, functional activities, and the quality assurance and quality control protocols necessary to achieve the data quality objectives dictated by the intended use of the data; and (2) the Field Sampling Plan (FSP) that provides guidance for all fieldwork by defining in detail the sampling and data-gathering methods to be used on a project. Components required by these two plans are described below. In addition, the FSP and QAPP should be submitted as a single document (although they may be bound separately to facilitate use of the FSP in the field.)

The overall objectives of the Sampling and Analysis Plan are as follows:

1. to document specific objectives, procedures, and rationales for fieldwork and sample analytical work;

2. to provide a mechanism for planning and approving field and laboratory activities;

3. to ensure that sampling and analysis activities are necessary and sufficient; and

4. to provide a common point of reference for all parties to ensure the comparability and compatibility of all objectives and the sampling and analysis activities.

To achieve this last objective, the SAP shall document all field and sampling and analysis objectives as noted above, as well as all data quality objectives and specific procedures/protocols for field sampling and analysis set

forth by the Site Management Plan.

The following critical elements of the SAP shall be described for each sample medium (e.g., ground water, surface water, soil, sediment, air, and biota) and for each sampling event:

1. sampling objectives {There can be many objectives for example engineering related (well yields, zone of influence), demonstration of attainment, five year review, etc.};

2. data quality objectives, including data uses and the rationale for the selection of analytical levels and detection limits (see Data Quality Objectives Development Guidance for Uncontrolled Hazardous Waste Site Remedial Response Activities; OSWER Directive 9355.07, March 1987); Also, Guidance for Data Useability in Risk Assessment; EPA/540/G-90-008, October 1990.

3. Training Range and Impact Area background update, including an evaluation of the validity, sufficiency, and sensitivity of existing data;

4. sampling locations and rationale;

5. sampling procedures and rationale and references;

6. numbers of samples and justification;

7. numbers of field blanks, trip blanks, and duplicates;

8. sample media (e.g., ground water, surface water, soil, sediment, air, and buildings, facilities, and structures, including surfaces, structural materials, and residues);

9. sample equipment, containers, minimum sample quantities, sample preservation techniques, maximum holding times;

10. instrumentation and procedures for the calibration and use of portable air-, soil-, or water-monitoring equipment to be used in the field;

11. chemical and physical parameters in the analysis of each sample;

12. chain-of-custody procedures must be clearly stated (see EPA NEIC Policies and Procedures Manual, EPA 330/9-78 001-R) May 1978, revised May 1986;

13. procedures to eliminate cross-contamination of samples (such as dedicated equipment);

14. sample types, including collection methods and if field and laboratory analyses will be conducted;

15. laboratory analytical procedures, equipment, and detection limits;

16. equipment decontamination procedures;

17. consistency with the other parts of the Work Plan(s) by having identical objectives, procedures, and justification, or by cross-reference; and

18. for any limited field investigation (field screening technique), provisions for the collection and laboratory analysis of parallel samples and for the quantitative correlation analysis in which screening results are compared with laboratory results.

The SAP must be the framework of all anticipated field activities (e.g., sampling objectives, evaluation of existing data, standard operating procedures) and contain specific information on each round of field sampling and analysis work (e.g., sampling locations and rationale, sample numbers and rationale, analyses of samples). During the FS/RD/RA, the SAP shall be revised as necessary to cover each round of field or laboratory activities. Revisions or a statement regarding the need for revisions shall be included in each deliverable describing all new field work.

The SAP shall allow for notifying EPA, at a minimum, **four weeks** before field sampling or monitoring activities commence. The SAP shall also allow split, replicate, or duplicate samples to be taken by EPA (or their contractor personnel), and by other parties approved by EPA. At the request of EPA, the Respondent shall provide these samples in appropriately pre-cleaned containers to the government representatives. Identical procedures shall be used to collect the Respondent' and the parallel samples unless otherwise specified by EPA. Several references shall be used to develop the SAP, for example:

1. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (OSWER Directive 9355.3-01, EPA/540/G-89/004, October 1988);

2. Data Quality Objectives for Remedial Response Activities Development Process, EPA/540/G-87/003, (OSWER Directive 9355.0-7B, March 1987);

3. Data Quality Objectives for Remedial Response Activities, example scenario: RI/FS Activities at a site with contaminated Soil and Ground Water (OSWER Directive 9355.0-7B, EPA/540/G-87/002, March 1987);

4. Test Methods for Evaluating Solid Waste, Physical/Chemical Method (EPA Pub. SW-846, Third Edition);

5. Analytical methods as specified in CFR 40 CFR Parts 136, 141.23, 141.24 and 141.25 and Agency manuals documenting these methods; and

6. Statement of Works for Inorganic and Organic Analyses, EPA Contract Laboratory Program.

7. Guidance for Data Useability in Risk Assessment, EPA/540/G-90-008, October 1990.

8. Ecological Assessment of Hazardous Waste Sites: A field and Laboratory Reference, EPA/600/3-89013, March 1989.

B.1 Quality Assurance Project Plan (QAPP)

The Quality Assurance Project Plan (QAPP) shall document in writing site-specific objectives, policies, organizations, functional activities, and specific quality assurance/quality control activities designed to achieve the data quality objectives (DQO's) of the FS/RD/RA. The QAPP developed for this project shall document quality control and quality assurance policies, procedure, routines, and specifications. All project activities throughout the FS/RD/RA shall comply with the QAPP. All QAPP and sampling and analysis objectives and procedures shall be consistent with Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans (EPA, 1983 - EPA, QAMS-005/80, 1980). All analytical methods shall be consistent with EPA analytical protocols and methods.

The 16 basic elements of the QAPP plan are:

1. title page with provision for approval signatures of principal investigators;

2. table of contents;

3. project description;

4. project organization and responsibility;

5. quality assurance objectives for measurement data, in terms of precision, accuracy, completeness, representativeness, and comparability;

6. sampling procedures;

7. sample custody;

8. calibration procedures and frequency;

9. analytical procedures, which must be EPA approved or equivalent methods;

10. data reduction, validation and reporting;

11. internal quality control checks and frequency;

12. performance and system audits and frequency;

13. preventive maintenance procedures and schedules;

14. specific routine procedures to be used to assess the precision, accuracy, and completeness of data and to assess specific measurement parameters involved;

15. corrective action; and

16. quality assurance reports to management.

As indicated in EPA/QAMS-005/80, the above list of essential elements must be considered in the QAPP for the FS/RD/RA. If a particular element is not relevant to the project, the reasons must be provided.

Information in a plan other than the QAPP may be cross-referenced clearly in the QAPP provided that all objectives,

procedures, and rationales in the documents are consistent, and the reference material fulfills the requirements of EPA/QAMS-005/80. Examples of how this cross-reference might be accomplished can be found in the Data Quality Objectives for Remedial Response Activities, Development Process, EPA/540/6-87/003 (OSWER Directive 9355.0-7B), March 1987 and the Data Quality Objectives for Remedial Response Activities, Example Scenario, EPA/540/G-87/004 (OSWER Directive 9355.0-7B), March 1987. EPA-approved analytical methods or alternative methods approved by EPA shall be used, and their corresponding EPA-approved guidelines shall be applied when they are available and applicable.

The QA/QC for any laboratory used during the FS/RD/RA shall be included in the QAPP. When this work is performed by a contractor to the private party, each laboratory performing chemical analyses shall meet the following requirements:

1. be approved by the State Laboratory Evaluation Program, if available;

2. have successful performance in one of EPA's National Proficiency Sample Programs (i.e., Water Supply or Water Pollution Studies or the State's proficiency sampling program);

3. be familiar with the requirements of 48 CFR Part 1546 contract requirements for quality assurance; and

4. have a QAPP for the laboratory including all relevant analysis. This plan shall be referenced as part of the contractor's QAPP.

The Respondent is required to certify that all data have been validated by an independent person according to Region I's Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses (amended as necessary to account for the differences between the approved analytical methods for the project and the Contract Laboratory Procedures (CLP) procedures). These approved methods shall be contained in the QAPP. The independent person shall not be the laboratory conducting the analyses and should be a person familiar with EPA Region I data validating procedures. The independent person performing the validation shall insure that the data packages are complete and, all discrepancies have been resolved if possible, and the appropriate data qualifiers have been applied. The Respondent shall keep the complete data

package and make it available to EPA on request. The complete data package must include the following:

- Narrative stating method used and explanation of any problems
- Tabulated summary forms for samples, standards and QC
- Raw data for samples, standards and QC
- Sample preparation logs and notebook pages
- Sample analysis logs and/or notebook pages
- Chain of custody sample tags
- An example calculation for every method per matrix.

B.2 Field Sampling Plan (FSP)

The objective of the Field Sampling Plan is to provide EPA and all parties involved with the collection and use of field data with a common written understanding of all field work. The FSP should be written so that a field sampling team unfamiliar with the Training Range and Impact Area would be able to gather the samples and field information required. Guidance for the selection of field methods, sampling procedures, and custody can be acquired from the Compendium of Superfund Field Operations Methods (OSWER Directive 9355.0-14, EPA/540/P-87/001), December 1987, which is a compilation of demonstrated field techniques that have been used during remedial response activities at hazardous waste sites. The FSP shall be site-specific and shall include the following elements:

Training Range and Impact Area Background. If the analysis of the existing Training Range and Impact Area details is not included in the Work Plan or in the QAPP, it must be included in the FSP. This analysis shall include a description of the Training Range and Impact Area and surrounding areas and a discussion of known and suspected contaminant sources, probable transport pathways, and other information about the Training Range and Impact Area. The analysis shall also include descriptions of specific data gaps and ways in which sampling is designed to fill those gaps. Including this discussion in the FSP will help orient the sampling team in the field.

Sampling Objectives. Specific objectives of sampling effort that describe the intended uses of data must be clearly and succinctly stated.

Sampling Location and Frequency. This section of the FSP identifies each matrix to be collected and the constituents to be analyzed. Tables shall be used to clearly identify the number of samples, the type of sample (water, soil, etc.), and the number of quality control samples (duplicates, trip blanks, equipment blanks, etc.). Figures shall be included to show the locations of existing or proposed sample points.

Sample Designation. A sample numbering system shall be established for the project. The sample designation should include the sample or well number, the sample round, the sample matrix (e.g., surface soil, ground water, soil boring), and the name of the Site.

Sampling Equipment and Procedures. Sampling procedures must be clearly written. Step-by-step instructions for each type of sampling that are necessary to enable the field team to gather data that will meet the Data Quality Objectives (DQOs). A list should include the equipment to be used and the material composition (e.g., Teflon, stainless steel) of equipment along with decontamination procedures.

Sampling Handling and Analysis. A table shall be included that identifies sample preservation methods, types of sampling jars, shipping requirements, and holding times. Examples of paperwork such as traffic reports, chain-of-custody forms, packing slips, and sample tags filled out for each sample as well as instructions for filling out the paperwork must be included. Field documentation methods including field notebooks and photographs shall be described.

C. Health and Safety Plan (HSP)

The objective of the site-specific Health and Safety Plan is to establish the procedures, personnel responsibilities and training necessary to protect the health and safety of all on-site personnel during the RD/RA. The plan shall provide for routine but hazardous field activities and for unexpected Training Range and Impact Area emergencies.

The site-specific health and safety requirements and procedures in the HSP shall be updated based on an ongoing assessment of Training Range and Impact Area conditions, including the most current information on each medium. For each field task during the RD/RA, the HSP shall identify:

1. possible problems and hazards and their solutions;

2. environmental surveillance measures;

3. specifications for protective clothing;

4. the appropriate level of respiratory protection;

5. the rationale for selecting that level; and

6. criteria, procedures, and mechanisms for upgrading the level of protection and for suspending activity, if necessary.

The HSP shall also include the delineation of exclusion areas on a map and in the field. The HSP shall describe the on-site person responsible for implementing the HSP for the Respondent representatives at the Training Range and Impact Area, protective equipment personnel decontamination procedures, and medical surveillance. The following documents shall be consulted:

1. Interim Standard Operations Safety Guides (Hazardous Response Support Division, Office of Emergency and Remedial Response EPA, Wash. D.C. 1982);

2. Superfund Public Health Evaluation Manual (OSWER Directive 9285.41, EPA/540/1-861060, EPA 1986);

3. Hazardous Waste Operations and Emergency Response (Department of Labor, Occupational Safety and Health Administration, (OSHA) 29 CFR Part 1910); and

4. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: Appendix B (NIOSH/OSHA/EPA 1986).

OSHA regulations at 40 CFR 1910 and Chapter 9 of the Interim Standard Operating Safety Guide, which describes the routine emergency provisions of a site-specific health and safety plan, shall be the primary reference used by the Respondent in developing and implementing the Health and Safety Plan.

The measures in the HSP shall be developed and implemented to ensure compliance with all applicable state and Federal occupational health and safety regulations. The HSP shall be updated at the request of EPA during the course of the RD/RA and as necessary.

D. Public Involvement Support Plan (PISP)

Within 15 days of the effective date of this Order, Respondent shall develop a PISP whose objective is to ensure for the public involvement. This plan shall build off and utilize the Impact Area Review team established by the groundwater investigation order, whose existence shall continue under this Order. This plan shall ensure adequate public involvement in all Work undertaken pursuant to this Order and shall include provisions for:

1 Making immediately available to the public all non-privileged information obtained or compiled pursuant to this Order;

2 Coordinating the Work under this Order and SOW with the Impact Area Review Team and providing resources for the effective functioning of the Review Team;

3 Providing periodic oral and written updates to the public on the progress of the Work;

4. Sharing immediately with the public all conclusions reached by the Respondents or their representatives with respect to the Work;

5 Coordinating the Work under this Order and SOWs with the ongoing groundwater investigations being undertaken by Respondents and with response actions being undertaken at MMR by the Installation Restoration Program.

6. Providing support to EPA, including:

a. participation in public informational or technical meetings, including the provision of presentations, logistical support, visual aids and equipment;

b. publication and copying of fact sheets or updates;

c. assistance in preparing a responsiveness summary after the public RD/RA comment periods; and

d. assistance in placing EPA public notices in print.